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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PROCTOR, JASON SCOTT

ART UNIT PAPER NUMBER

2123

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/965,905	<b>Applicant(s)</b> WALACAVAGE ET AL.	
	<b>Examiner</b> Jason Proctor	<b>Art Unit</b> 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10 and 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 12-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/18/05</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 October 2005 has been entered.

Claims 1-21 were rejected in Office Action mailed on 18 August 2005. Applicants' response dated 20 October 2005 has amended claims 1, 12, and 21; and cancelled claims 9 and 11. Claims 1-8, 10, and 12-21 are pending in this application.

Claims 1-8, 10, and 12-21 have been rejected.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8, 10, and 12-21 are rejected under 35 U.S.C. § 102(b) as being anticipated by “Emulation of a Material Delivery System” by Todd LeBaron and Kelly Thompson (LeBaron).

Regarding claims 1, 12, 20, and 21, LeBaron discloses:

A computer-implemented method for verification of part flow in a system [“*Emulation of the complex pick and pack conveyor system will be presented.*” (page 1055, left column, Abstract); “*The material handling system consists of conveyor sections which continuously move carriers around a closed loop that connects all pick and pack stations.*” (page 1055, left column, System Description)] including a programmable logic controller verification [“*Routing logic, PLC or PC control software, sequencing algorithms, and more can be integrated, tested, and debugged within a simulation environment.*” (Henceforth “control logic” refers to at least controller logic in a PLC.) (page 1055, left column, Abstract); *Emulation has been used for a Rapistan Systems project to test, debug, and optimize complex algorithms and control logic.*” (page 1055, left column, Abstract)], comprising the steps of:

Constructing a simulation model of a part flow in a manufacturing line using a computer [“*The material handling system consists of conveyor sections which continuously move carriers around a closed loop that connects all pick and pack stations.*” (A part flow in a manufacturing line.) (page 1055, left column, System Description); “*Emulation of the complex pick and pack conveyor system will be presented.*” (page 1055, left column, Abstract)];

Executing the simulation model of the part flow, wherein the simulation model interacts with a PLC logical verification system [“*Emulation of the Rapistan control system for this project integrates a simulation model with the actual control system. The simulation model provides the output for evaluating control logic and algorithms.*” (page 1055, right column, Emulation)];

Determining if the part flow represented in the simulation model is correct [*"The emulation used at Rapistan Systems was able to prove that the system could handle the projected growth in daily orders."* (page 1060, left column, Summary)];

Modifying the part flow represented in the simulation model if the part flow represented in the simulation model is not correct [*"RULE1 was developed to improve the FIFO algorithm."*, (page 1058, right column, The RULE1 Algorithm)]; and

Using the part flow simulation model to test PLC code [*"Emulation provides the graphical and statistical output needed to accurately evaluate different algorithms and control logic."* (page 1060, left column, Summary)] and implementing the manufacturing line according to the part flow simulation model [*"during the refinement process, two initial algorithms were developed and compared. These two algorithms are called the FIFO and RULE1."* (page 1057, right column, Algorithm Development); *"The emulation results indicate that using the correct order scheduling and pack assignment algorithm is key to improving pack station utilization and system throughput."* (page 1060, left column, Analysis) The clear implication is that the manufacturing line is implementing according to the analysis of the emulation results.].

In response, Applicants argue primarily that:

LeBaron et al. does not disclose playing a simulation model by a PLC logical verification system on a computer and generating PLC code if a part flow represented in the simulation model is correct. LeBaron et al. also does not disclose using the part flow simulation model to generate PLC code and implementing the manufacturing line according to the part flow simulation model.

The Examiner respectfully traverses this argument as follows.

Regarding the allegation that LeBaron does not disclose “playing a simulation model by a PLC logical verification system on a computer,” Applicants’ attention is respectfully drawn to the following portions of LeBaron:

[*“Routing logic, PLC or PC control software, sequencing algorithms, and more can be integrated, tested, and debugged within a simulation environment. Simulation models communicate with control software and produce animation and statistical output for evaluating control logic and material handling systems.”* (page 1055, left column, Abstract); *“Emulation provides the graphical and statistical output needed to accurately evaluate different algorithms and control logic.”* (page 1060, left column, Summary)]

Thus the entire computer system is regarded as a “PLC logical verification system on a computer.” LeBaron expressly discloses that the “PLC or PC control software” “can be ... tested, and debugged within a simulation environment.” In the Examiner’s interpretation, LeBaron thus discloses a “PLC logical verification system on a computer.” If Applicants’ regard the term “PLC logical verification system” to hold a separate specific definition, the Examiner respectfully suggests claim language which recites that definition.

Regarding the allegation that LeBaron does not disclose “generating PLC code if a part flow represented in the simulation model is correct,” Applicants’ attention is respectfully drawn to the following portions of LeBaron:

[*“Because the actual control system is used to develop, test, and refine algorithms and logic, it exists as developed in the real system.”* (page 1055, left column, Abstract); *“By developing and refining the control logic and algorithms in the control software, it exists as developed.”* (page 1055, right column, Emulation); *“The emulation results indicate that using the correct order*

*scheduling and pack assignment algorithm is key to improving pack station utilization and system throughput.*” (page 1060, left column, Analysis)]

Thus the method disclosed by LeBaron “generates” PLC code wherein the part flow represented in the simulation is correct. LeBaron expressly discloses the use of actual PLC code in the simulation, which we must remember can be “integrated, tested, and debugged within a simulation environment” (page 1050, Abstract). LeBaron expressly discloses a step of analysis to determine which PLC code algorithm is best (page 1060, Analysis). LeBaron expressly discloses that the developed control logic can then be implemented without modification into the actual control software (page 1055, Emulation). Thus LeBaron anticipates “generating PLC code if a part flow represented in the simulation model is correct.”

Applicants’ arguments have been fully considered but have been found unpersuasive.

Regarding claims 2-5 and 13-16, LeBaron discloses selecting a part generator, generating a part with the part generator, and moving the generated part to a part location [“*Emulation of the complex pick and pack conveyor system will be presented.*” (page 1055, left column, Abstract); “*All of the components for a particular order are assigned and routed to a specific pack station.*” (page 1055, right column, System Description)]; The analysis is conducted for a simulated 23-hour period (page 1060, left column, Analysis) which implicitly discloses the generation of components for a particular order so that the emulation can fulfill the order.].

Regarding “testing the generated part at the part location”, the specification teaches this limitation as determining if the part is present or not present (specification as amended, page 12, lines 9-11). LeBaron discloses emulation of a pick and pack conveyor system and therefore

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implicitly discloses “testing the generated part at the part location” as the ability to detect if the part is present or not present is a basic underlying principle in the proper operation of a pick and pack conveyor system. Further emphasis of this is LeBaron’s disclosure [*“The goal in developing algorithms was to process the required number of orders per day within the planned facility schedule. Fully utilizing the pack stations is key in accomplishing this goal.”* (page 1057, right column, Problem Description)] that clearly implies that pack stations can determine whether a necessary generated part is present at that pack station.

Regarding claims 6-8 and 17-19, LeBaron discloses constructing records for the parts [*orders*] wherein the record has at least one resource and at least one capability [*“Historical data was used to generate daily order profiles (as in Table 1).”* (page 1057, right column, Problem Description); Table 1 shows records [*orders*] for the parts, including a resource [*Pick Station*] and a capability [*# Pick Types*]].

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8am-4pm M-FF.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Leo Picard can be reached at (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.




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Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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